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A Study on the Responsiveness of the Malaysian State Governments' Revenues to their Development Expenditures

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Abstract. The main objective of this study is to examine the relationship between state governments' revenue in Malaysia and their development expenditures. We seek to analyze to what extent the state governments are benefiting from the investments that they have made in the form of development projects. Given the weak temporal dimension of our sample, we will apply the generalized method of moments (GMM) as developed by Arellano and Bond (1991). The results of our estimations show that when a one-period lag is retained, the state governments' revenue is significantly and positively associated with development expenditure. An increase in development projects will lead to an increase in state governments' revenues. However, the results of the other two estimations show that development expenditures are not correlated with state governments' revenue. Together these results may imply that the effect of development projects on state governments' revenues only lasts for one year and will disappear afterwards. This in turn may be explained by the fact that most if not all development projects implemented by the state governments are rather small in scope and with immediate or short term effect. Nevertheless, the results are not sufficient for us to claim that the revenues obtained from these channels will necessarily be used for the repayment of the debt contracted to finance the projects. A further investigation is needed in order to see to what extent the proceeds from the development projects carried out by the state governments in Malaysia is used to repay their loans.

Keywords: state governments, GMM, decentralization.

1. Introduction

In Malaysia, the state governments borrowing capacity is severely constrained by the enactment in 1976 of Article 111 (2) of the Malaysian Constitution. According to the Article, state governments can only borrow money once they have been authorized to do so by the Federal government. The main objective of the limitation is to enable the Federal government to have a hold on the risk of fiscal profligacy that may arise due to uninhibited spending by the state governments. As a consequence of this restriction, the Malaysian state governments generally use their borrowings for the purpose of financing their development expenditure as it will be very difficult for them to obtain authorization from the Federal governments if they were to borrow to cover their current expenditures. On another note, given the fact that the state governments' financial resources are rather limited, the latter have no choice but to rely on borrowings to finance their development expenditures. Furthermore, it is natural that their borrowings are channelled towards the financing of development projects as the latter are more likely to generate future incomes that can then be used to service and reimburse the contracted loans. That said, however, it is important to emphasize that not all development projects will translate into future resources as some of them may only be aimed at providing basic infrastructure to the population (such as the construction of low-cost houses or road paving). Nevertheless one may also argue that in the end, even this type of projects will generate income in the future as they may increase efficiency as well as labour productivity. A relevant policy question will thus be: to what extent are the state governments' revenues responsive to the amount of development

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expenditures that they have carried out. If the state governments' revenues are found to be positively linked to the amount of their development expenditures, this may imply that the latter do contribute to the amount of revenues collected by the state governments. This in turn may implicitly suggest that the state governments will face less difficulty in servicing and paying back the debts contracted to finance the development expenditures. On the other hand, for these development projects to turn into future taxes for the state governments, it is important that the latter have a share in the future income generated by these projects. In Malaysia where most of the tax bases are devolved to the central government, it is plausible to conceive a situation where all the proceeds of a development project carried out by the state governments fell to the hand of the federal government. In other words, even though the borrowings of the state governments in Malaysia are mainly used for development purposes, it is yet to be analyzed whether the revenues of the state governments can be expected to increase with development expenditure. If revenues do not respond to these investments then funding through borrowing is less reasonable even for development purposes.

The paper is organized as follows. The next section provides a brief review of the literature. Section 3 discusses the data and the methodology used in the study. The results of the estimations will be presented in Section 4. Finally, section 5 concludes.

2. Literature review

The literature on the fiscal behaviour of subnational governments is relatively well developed especially on the issues concerning their expenditure behaviour. Shadbegian (1999) estimated the impact local tax and expenditure limitations (TELs) have on the level and structure of local government revenue. Using a panel data set on 2,955 counties (1962-87), this study demonstrated that TELs decrease the level of property and 'other' taxes, but increase the level of miscellaneous revenue, partially offsetting the decrease in taxes. Rooney (2002) focused on the question of whether home rule authority as granted under the Illinois Constitution results in changes in municipal tax structure and tax effort. Analysis of the data collected for this paper showed that home rule authority is not a significant factor in the level of taxation imposed by a municipality. Stine (1985) tested the asymmetric response hypothesis for sixty-six Pennsylvania county governments over the 1978-88 period. This marked a period of retrenchment in which counties experienced frequent annual reductions in federal aid. The local government revenue response to federal aid was found to be asymmetric. The reduction in federal aid induced a reduction in own-source revenue. The results supported the notion that taxpayers prefer fiscal restraint when permanent loss of aid occurs. Jha et al. (2000) in their studies on the tax efficiency of 15 major states in India argued that in the country, historically tax efficiency has played a relatively minor role in resource transfers from the central to state governments and much of this transfer is made on the basis of need and backwardness characteristics of the recipient states. However, their empirical results show that that intergovernmental grants to be negatively correlated with tax efficiency. They also found that this effect works both directly through the variable "central grants as a proportion of total state expenditure" and indirectly through the interaction of this variable with other variables. Chaparro et al (2004) examine fiscal data for a large number of Colombian municipalities for the 1985-99 period with an objective to describe the effects of the transfer system on horizontal balance among municipalities. The authors conclude that there is some evidence that transfer growth has discouraged tax effort by the municipalities, even in the case of formula-driven *Participaciones Municipales* (PM) which should not in itself create a soft budget constraint problem. More recently Aragon and Gayoso (2005) examine the impact of federal transfers on the state governments' own revenue in Peru. Their results point to the existence of a negative relationship between transfers and local fiscal effort in Peru. They also found that the effect of transfers on local effort decreases with the level of per capita expenditure of the local government. In the case of Malaysia, the literature on state governments' fiscal behaviour is rather limited which is understandable given the relatively small degree of responsibilities that are devolved to the state governments despite the federal construct of the country's Constitution. It is also interesting to note that almost all of these works are descriptive in nature and contained relatively little empirical examinations.

3. Data presentation and methodology

The study is based on the expenditures and revenues data of the 13 states in Malaysia from 1980 to 2003 that are obtained from the Yearly Financial Statements of the state government. The data concerning the state demographic and economic characteristics are mainly obtained from the State and District Report published by the Statistics Department. Expenditures and revenue data are measured in real per capita terms using the consumer price index as deflator. In order to examine the responsiveness of state governments' revenues to developments investments, we estimate the following equation:

$$\ln R_{it} = \alpha_0 + \beta X_{it} + \beta D_{it} + \varepsilon_{it}$$

Where R, is the log of the real per capita revenue of the state governments, D is the lagged development expenditure of the state governments. We take a lagged value of development expenditure as we believe that it takes a certain time before an investment could yield benefit to the state governments. X is the control vector that includes the log of the total population, the GDP, the dummy for state governments with petroleum resources, the proportion of forest area, the size of the state and the urbanization rate. We also included in our model the lagged value of the dependant variable in order to control for revenue persistence. Because of the inclusion of the lagged value of the dependant variable, the ordinary panel data estimation will yield biased results. The potential bias is function of 1/T and the intra-individual estimator is convergent only in the case where T is big. Given the weak temporal dimension of our sample, the bias is potentially big. Consequently, we will apply the generalized method of moments (GMM) as developed by Arellano and Bond (1991).

4. Results and discussion

The results of our estimations are reported in table 1. The three columns of the table differ in the lagged of the development expenditure retained – one year for column A, two years for B and three years for C. Our estimations showed that the joint hypothesis of correct model specification and valid instruments cannot be rejected and while the disturbances exhibit negative first-order serial correlation, there are no sign of second-order serial correlation.

The results of our estimations show that when a one-period lag is retained, the state governments' revenue is significantly and positively associated with development expenditure (column A). An increase in development projects will lead to an increase in state governments' revenues. This implies that the Malaysian state governments do benefit from the development expenditure that they have carried out. They should thus be able to service and eventually repay the debt that they have contracted in order to finance these expenditures. However, the results of the other two estimations (column B and C) show that development expenditures are not correlated with state governments' revenue. Together these results may imply that the effect of development projects on state governments' revenues only lasts for one year and will disappear afterwards. This in turn may be explained by the fact that most if not all development projects implemented by the state governments are rather small in scope and with immediate or short term effect[1]. Indeed given the lower scope of responsibilities of the state governments, most development activities are under the purview of the federal government. As a result, these projects will only yield revenues to the state governments once and no other financial benefits can be obtained from them afterwards. As for the control variables, only lagged revenue and population are found to be significantly correlated with state governments' revenue.

One may argue that the effects of the development expenditure to the state governments' revenue actually take place through the transfers that the state governments receive from the federal government. Since most of the taxes are devolved to the federal government, it is very likely that the latter will be the one who will benefit directly or indirectly from development projects implemented by the state governments. In other words, the developments may have potential future incomes attached to them but these incomes will mainly be enjoyed by the Federal government due the way taxation powers are distributed in Malaysia. Nonetheless, state governments may still be able to get some benefits from these projects through the transfers that they receive from the Federal government. If this is the case, then it would mean that it is

[1] The ideal situation would be when we have development expenditures ventilated according to their types, their level of borrowing as well as their size.

ultimately the federal government that will decide whether the state governments will benefit from their developments expenditures or not. And this will also mean that the Federal government has in its hand a powerful source of influence that it can exert on the state governments. In order to test for this argument, we re-estimate the equation above by replacing our dependant variable with the state governments' own revenue. If the effect of the development transit mainly through the federal grants, we shouldn't find any correlation between our dependent variable and the development expenditure. Table 2 summarizes the results of our estimations. Our results seem to indicate that even after controlling for the federal transfers, development expenditures are still found to be positively correlated with state governments' revenues. Again, only one-year-lagged development expenditures are found to be significantly and positively correlated with state governments' own revenue. It is also noteworthy that the estimated parameters for all the variables are of similar magnitude to the one found previously. The results may signify that the benefits from the development projects implemented by the state governments do not transit through the federal transfers. As for the control variable, only lagged revenues and population are found to be significant. The estimations also found that the joint hypothesis of correct model specification and valid instruments cannot be rejected

Table 1. The effects of development expenditure on revenue

	A	B	C
Lag revenue	0.6388 (0.1532) ***	0.7398 (0.1067) ***	0.6835 (0.1163) ***
Lag dev. Exp	0.0989 (0.0461) *	0.0336 (0.0255)	0.0581 (0.0392)
Size	0.0000 (0.0000)	-0.0000 (0.0000)	-0.0000 (0.0000)
Petrol	0.2345 (0.1629)	0.1859 (0.1204)	0.2243 (0.1290)
Population	-0.1082 (0.0409) **	-0.0902 (0.0424) *	-0.0935 (0.0427) **
Forest	-0.0000 (0.0000)	-0.0000 (0.0000)	-0.0000 (0.0000)
Urban	0.0028 (0.0027)	0.0022 (0.0014)	0.0027 (0.0014) *
GDP	0.0004 (0.0003)	0.0003(0.0002)	0.0004 (0.0003)
Constant	1.8284** (0.7912)	1.5331** (0.6498)	1.6715 (0.6622) **
Hansen test	8.02	2.96	3.70
Hansen p-value	0.432	0.564	0.448
1st order	-2.93	-2.91	-2.98
AC (prob)	(0.003)	(0.004)	(0.003)
2nd order	0.72	1.01	0.76
AC (prob)	(0.473)	(0.313)	(0.445)

Notes: standard error in parentheses; significant at 10% level*, significant at 5% level**, significant at 1% level***.

Table 2. The effects of development expenditure on own revenue

	A	B	C
Lag revenue	0.6375 (0.1537) ***	0.7351 (0.1032) ***	0.6833 (0.1164) ***
Lag dev. Exp	0.0992 (0.0462) *	0.0347 (0.0269)	0.0581 (0.0392)
Size	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
Petrol	0.2358 (0.1635)	0.1913 (0.1178)	0.2246 (0.1292)
Population	-0.1085 (0.0410) **	-0.0911 (0.0412) *	-0.0936 (0.0427) **
Forest	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
Urban	0.0028 (0.0020)	0.0023 (0.0015)	0.0028 (0.0014) *
GDP	0.0004 (0.0003)	0.0003 (0.00023)	0.0004 (0.0003)
Constant	1.8337 (0.7925) **	1.552 (0.6291)	1.6722 (0.6626) **
Hansen test	8.01	5.08	3.70
Hansen p-value	0.432	0.279	0.449
1st order	-2.93	-2.82	-2.98
AC (prob)	(0.003)	(0.005)	(0.003)
2nd order	0.71	1.01	0.76
AC (prob)	(0.475)	(0.314)	(0.445)

Notes: standard error in parentheses; significant at 10% level*, significant at 5% level**, significant at 1% level***.

5. Conclusion

The main objective of this study is to analyze to what extent the state governments are benefiting from the investments that they have made in the form of development projects. Based on our results, it appears that state governments in Malaysia managed to derive some benefit from the developments projects that they have implemented. We also found that the benefits of the development projects do not transit through the transfers from the federal government. However, the benefits of the projects seem to be of a very short period as only projects carried out a year before has an effect on the state governments' revenue.

Nevertheless, the results are not sufficient for us to claim that the revenues obtained from these channel will necessarily be used for the repayment of the debt contracted to finance the projects. A further investigation is needed in order to see to what extent the proceeds from the development projects carried out by the state governments in Malaysia is used to repay their loans.

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